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Analysis of Food Granary Development (Study: In Jombang Regency)

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A B S T R A C T

The purpose of this study was to analyze the effect of government assistance, the role of members and location on the development of food storage in Jombang Regency for the period 2014-2017. This thesis studies 384 food granaries in 21 districts. The analytical method used is the Pool Least Square (PLS) by using the variable number of dependent stock grain. This study uses data from the Food Security Service of Jombang Regency, and for the use of time data from 2014 to 2017, which means that this study uses panel data. The results showed that together the government, member and location variables had a significant effect on the output of food storage development. Whereas partially the member and location variables have a positive positive effect on government assistance variables which have a significant negative effect on the output of growth stock grain in Jombang Regency.

Keywords: *Development of Food Barn, Government Assistance, Members, and Location, PLS*
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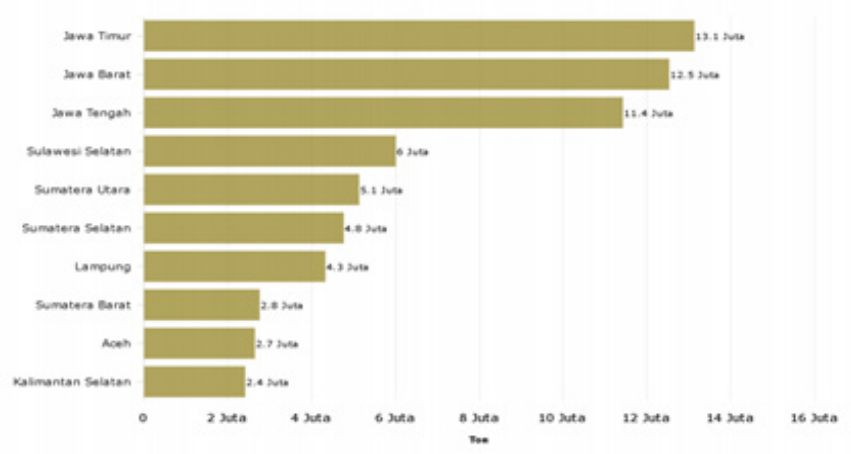
INTRODUCTION

The problem of food security has always been an everyday issue, so it is not surprising that every country always prioritizes the development of food security as a foundation for the development of other sectors (Riptanti & Qonita, 2017). The concept of food security generally consists of two main elements, namely supply and affordability of food accessibility, which includes aspects of production stability, distribution, price policy, and consumption. Food security is the most basic policy in improving people's welfare (Misra, 2014). This policy depends on the ability of the government and the community to provide and use food according to regional potential and community needs (Sun et al., 2017).

As a socio-economic institution that grows from a farming community, the existence of a village food barn institution needs to be continuously developed, because it has great potential as the basis of the village community's economy (Misra, 2014). Strengthening or developing village food granary institutions is not just re-establishing / reactivating the existence of village food barns, but the institutional structure, working mechanism, enthusiasm and commitment need to be perfected in accordance with the times and institutional management processes (Riptanti & Qonita, 2017).

Currently, the development of the village granary has been facilitated by the Lumbung Desa program by the Ministry of Home Affairs and the Local Government (Provincial and District). At this time it can be said that most of the food barn development initiatives were carried out by the government, both central and local governments. The process of building a granary is also guided by the concept of community participation because the most ideal way to develop a food barn through participation is to build a sense of belonging and a willingness to utilize the assets they have (Boratyńska & Huseynov, 2017).

On a national scale, East Java is still a mainstay area for rice production. East Java Province is able to produce about 1.1 million tons of rice each year. The Public Company Logistics Affairs Agency (Perum Bulog) recorded the 10 highest rice producing provinces in Indonesia. The purpose of this recording is to keep the rice stock within the national reach and another use is to let the government and the public know which areas are the highest rice producers. Bulog as a business entity cooperates with the government to oversee rice production in the region.



Source: (Databoks, 2017)

Figure 1.
Rice Production by Province (Jan-Sep 2018)

In 2017, rice production in East Java reached 13.13 million tons or 16.1 percent of the total national production. According to forecast II figures, the national rice production reached 81.38 million tons, so that this value increased by 2.56 percent from the previous year which was only 79.35 million tons. Meanwhile, the second largest national food store is West Java with a production of 13.52 million tons (15.38 percent) of the total national production. Then in third place is Central Java with a production of around 11.42 million tons, equivalent to 14 percent. (Databoks, 2017).

East Java Province, as one of the ten provinces in Indonesia which is the largest contributor to rice production, cannot be separated from the contribution of rice production at the district level. East Java Province has districts that support national food self-sufficiency, one of which is Jombang Regency. Jombang Regency is believed to be able to provide food availability at the provincial and national levels. In 2016, Jombang Regency has provided a surplus of rice equivalent to 165,000 tons to support the need for rice supply in East Java and National Provinces and in one harvest yield in 2017, Jombang Regency has provided a surplus of 20,000 tons of rice equivalent. (Directorate General of Food Crops, 2016).

The Jombang Regency Government has proven its commitment to the community food availability program and supports the success of food self-sufficiency. In 2017, the Jombang Regency Government inaugurated a food barn in Gumulan Village, Kesamben District. Jombang Regency currently has at least 384 food barns in 21 existing sub-districts, not all of these barns are active. There are 333 active barns, 25 of which are less active and 26 of those that are inactive. (Jombang Regency Food Security Service, 2017).

Jombang Regency is having a target as a national food barn in the 2018-2019 planting season. To achieve this target, various anticipatory measures are needed, such as the threat of floods, drought to pest attacks. The development of food storage in Jombang Regency is a top priority in development because food is the most basic need for human resources. This is because various adverse impacts due to drought, floods, and natural disasters remind us that this area does not yet have a reliable food security system.

At present, the food barn in Jombang Regency is developing on the basis of government and self-help assistance. The community participates in assisting in the implementation of food storage development, because the village food barn institution is directed at creating changes in the behavior of rural communities, in the form of: knowledge, skills and attitudes that lead to the level of community participation in implementing rural food security development (Habtemariam et al., 2019).

The existence of a food barn is considered capable of having an influence on food availability, the guidance of farmer groups is carried out continuously and directed by field extension officers (Pritchard et al., 2019). Those who play a role in assisting and providing knowledge about problems related to agriculture and assistance in farming procedures. Other parties also have a role in the success of this activity. Both farmer groups, food barns, village officials and the government, namely the agriculture office and the food security service (Huang et al., 2017).

The purpose of this research is to analyze the effect of government assistance, the number of members of the barn, and location on the development of community food barns in Jombang, the institutional granary or village barn is a system or special norms that organize a series of patterned actions. and structured in meeting the food needs of the community. On the basis of paying attention to the increasingly complex issues of food security in the

future, both as a result of the global food crisis, global economic crisis and the impact of global warming, food barns as institutions to support food reserves are strategic to be developed in every region.

Mwangi et al., (2020) research that is about production and consumption of orphaned crops such as sweetpotato has been promoted as alternative food diets in sub-Saharan Africa (SSA). However, sustainable productionof these crops is hampered by poor access to seed. Mwangi et al., (2020) paper assesses seed security among smallholder sweetpotato producers in Kenya and its implications on household food security. Data for the paper were collectedthrough a survey of 383 sweet potato producing households in Kirinyaga and Homabay Counties of Kenya. Seedsecurity was measured through an adaptation and modification of the FAO's seed security framework based onfour parameters–availability, accessibility, varietal suitability and seed quality. We measured food security usingthe Food Insecurity Experience Scale (FIES). Data were analysed using descriptive statistics and poisson regressionmodels. Results show that our respondents experienced mild seed insecurity with a score of 4.8 out of a possiblemaximum score of 12. Results further show that seed security positively and significantly influenced food securityand seed access is the most critical element influencing food security. The regression results also show that wealthindex, distance to the market, income and education level positively and significantly influence household foodsecurity. Ourfindings underscore the importance of promoting seed security for orphaned crops, especially amongthe low-income households as a mechanism for improving household and by implication national food andnutrition security.

Study of Guo et al., (2019) examines how the transition to adulthood may affect food security for individuals with disabilities and estimates the effects of SNAP participation on their food security during the transition. The study uses a repeated cross-sectional design with five years of data (2011–2015) from the National Health Interview Survey (NHIS) in the US. The difference-in-difference approach is applied to compare individuals with and without disabilities regarding their food security status in adolescence and young adulthood. Instrumental Variable analyses are conducted using state SNAP policy rules as exogenous instruments to estimate the effects of SNAP participation on food security status for youth and young adults with disabilities. Results indicate that transition into adulthood results in greater food security for individuals without disabilities but an increased risk of low food security for individuals with disabilities. The increased risk for young adults with disabilities may well put them at very low food security, the most severe category on the food security scale. SNAP participation appears to have greater impacts for youth than for young adults. Since food security likely has a profound impact on the long-term development, economic independence, and self-sufficiency, we discuss a few policy strategies that may help individuals with disabilities in their transition to adulthood.

He et al., (2019) research that is about quantifies how China's food habits have influenced the requirements for arable land and water between 1981 and 2016 using data collected from multiple sources and projects the amount of arable land and irrigation water needed to ensure national food security. The results show that changes in food habit have led to increased demand for arable land and irrigation water during the past 30 years. In 1981, 124 million ha of arable land and 159 billion m3 of irrigation water were needed for food consumption; however, these values increased to 137 million ha and 184 billion m3, respectively in 2016. Moreover, changes in food habit have exceeded the level of agricultural technology, becoming

the main reason for increase in per capita demand of arable land and water after 1996. Under the current food habits, the demand for arable land and irrigation water will increase by 14% and 13%, respectively when the expected population peak occurs (in 2032), compared to those of 2016. However, if the food habits recommended by China's nutritionists are followed in the future, more arable land and irrigation water will be needed to meet China's demand compared to the current diet patterns. This study also proposes some measures to ensure China's food security based on the presented findings.

According to the Regulation of the Minister of Agriculture Number 17 of 2015, a granary is a place or building to store rice or other foodstuffs that are useful for dealing with a famine. A food barn is run by a food storage group which can be defined as an institutional food reserve and is formed by rural / urban communities and is managed in groups with the aim of developing food reserves for the community in an area with a system of delay in selling, storing, distributing, processing and trading foodstuffs. managed in groups. (Rachmat, 2011).

METHODOLOGY

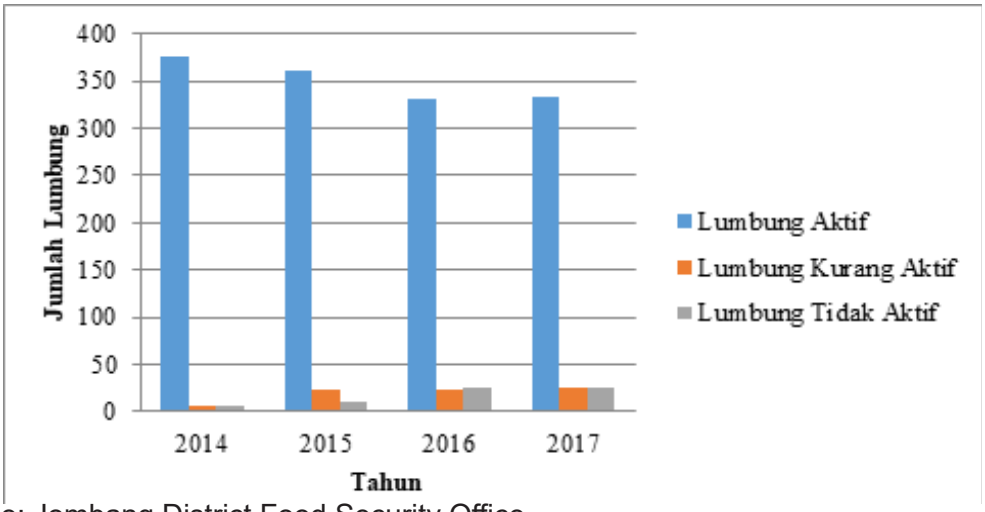
This study uses a quantitative approach with real-world analysis (not reduced to a causal relationship model), and is holistic. In this study, there are two types of variables used, namely the dependent variable and the independent variable. (1) The dependent variable in this study is the development of food barns in Jombang Regency. (2) The independent variables in this study are government assistance / programs, members and location. This study uses data on the classification of food barns in Jombang Regency, which consists of the object of research and the development of the number of barns, government assistance / programs, members and locations.

Researchers use panel data regression models because the type of data is panel data, namely data that has cross section and time series characteristics. Panel data is useful for seeing the economic impact that is inseparable between each individual in several periods. This study uses panel data regression estimation method which consists of three methods, namely PLS (Pooled Least Square), FEM (Fixed Effect Model), and REM (Random Effect Model). Model estimation with panel data is to perform a test that aims to select the estimation technique. The results of these tests determine which method is best used in estimating panel data regression. To determine the model between PLS or fixed effects, the F statistical test or Chow test is used. Meanwhile, to choose between the PLS model or the random effect using the Langrange Multiplier (LM) test.

RESULTS AND DISCUSSION

The food barns in Jombang Regency, East Java are spread over 21 existing Districts, besides being able to become food reserves during the dry season, they are also expected to be able to manage farmers' crops so that farmers can regulate the price of grain to be sold using a delayed sale system.

Community Food Granaries in Jombang Regency in the 2014 - 2017 fiscal year amounting to 384 barns. According to the Food Security Service of Jombang Regency, the amount is adjusted to two categories, namely active and inactive food barns. Active food barns are food barns that have permanent members, regular meetings, savings and loan activities for grain, a group administrator and a food barn record book (warehouse receipt). Figure 4.2 active food barns in Jombang Regency in 2014-2017:



Source: Jombang District Food Security Office

Figure 2.
The development of the food barn in Jombang Regency 2014-2017

Figure 4.2 shows the development of food storage in Jombang Regency in 2014-2017. In Figure 4.2, there are symptoms from the side of the development of the food barn which has experienced ups and downs. All means are done so that the increase in food storage from year to year is getting better. One of the ways to increase the productivity of food barns is to improve the management of food barns and increase rice productivity. The development of food barns shows that farmers want to be able to regulate their own crops without relying on the help of middlemen with a system of postponement of selling, as well as having a positive impact on food stock stocks.

This study aims to examine and analyze partially and jointly the effect of government assistance, members of the barns and the location of the development of food barns in Jombang Regency in 2014-2016. The dependent variable in this study is the number of barn developments (Y), while the independent variables include the government assistance variable (X1), the barn members (X2), and the location of the barn (X3).

This study uses panel data which is a combination of cross section data and time series data. The cross section data used in this study consisted of 21 sub-districts in Jombang Regency, while the time series data used were from 2014 to 2017. The data is secondary data obtained from the Food Security Service of Jombang Regency. The initial stage, namely data processing, is to perform panel data regression on the following equation:

$$LnLumbung_{it} = \beta o + \beta_1 lnBantuan_{it-n} + \beta_2 lnAnggota_{it-n} + \beta_3 DLokasi_{it-n} + e$$

The model used in analyzing the effect of independent variables, namely government assistance, members and location on the variables of the development of food storage in Jombang Regency with the 2014-2017 research period is the Pool Least Square (PLS) model.

In Table 1 with the PLS model, there are insignificant variables, government assistance variables with a probability of 0.191. The member variable has a probability value of 0.000 and the location variable has a probability value of 0.029. When viewed from the level of significance (α = 0.05), the government assistance variable does not have a significant effect on

Table 1.
Results of Panel Data Regression with Dependent Level of Development

Dependent variable: The development of the food barn		Regression Model		
		PLS	FEM	REM
Constanta (c)	Coefficient	-2.951502	-2.667313	-2195994
	t-Statistic	-318	-2,24	-2,31
	Prob	**0.002**	**0.030**	**0.021**
LN_BANTUAN	Coefficient	0,0705109	0,0646035	0,038217
	t-Statistic	1,32	0,96	0,72
	Prob	**0.191**	**0.343**	**0.471**
LN_ANGGOTA	Coefficient	0,6284575	0,6036573	0,6045164
	t-Statistic	12,88	11,97	12,60
	Prob	**0.000**	**0.000**	**0.000**
D_LOKASI	Coefficient	0,2777075	0,2889903	0,3094785
	t-Statistic	2,24	2,32	2,58
	Prob	**0.029**	**0.024**	**0.010**
Cross Section = 21 Kecamatan		Prob (F-stat) 0.0000	Prob (F-stat) 0.0000	Prob (F-stat) 0.0000
		R^2 0.8843	R^2 0.8771	R^2 0.8767

economic development, while the member and location variables have a level of significance of less than 5 percent so that the member and location variables have a significant effect on the development of the food barn.

The variables of government assistance, members and location of food barns simultaneously have a significant effect on the development of food barns at the sub-district level in Jombang Regency in 2014-2017. This can be proven by testing the probability of F-statistics with a value of 0.0000 smaller than the level of significance of 5 percent (α = 0.05).

The variables of government assistance, members and the location of the food barn partially influence the development of the food barn, by looking at the probability value. The probability of government assistance has a probability value of 0.191, the probability of a member having a probability value of 0.000, and the probability of location having a value of 0.029 of the three variables which only have a probability value below the level of significance of 5 percent (α = 0.05) is a member and location, so that members and location together significantly influence the development of food storage at the sub-district level in Jombang Regency in 2014-2017.

CONCLUSIONS

In this study it was found that government assistance, member participation and location proved to have a significant effect on the development of food barns in Jombang Regency in 2014-2017. Government assistance, member participation and location have been proven to significantly influence the development of food barns in Jombang Regency in 2014-2017. Meanwhile, the government aid variable has no significant effect on the development of food barns in Jombang Regency in 2014-2017. The suggestion given by the author is that the Government through the Food Security Service is advised to continue to foster, supervise and provide assistance to food barns that have been established for a long time and recently. Because the monitoring process carried out by the government directly has a positive impact on the community. The public will feel more

cared for if the government takes part in managing the food barn.

For the role of the members of the barn in the development of the community food barn, it is necessary to hold socialization activities of the community barns that are carried out more frequently so that all farmers can understand the existence of the food barn is very important and empowered as a whole. For activities carried out by members of the barn in managing the food barn, it is necessary to hold training and coaching more frequently to increase the capacity of human resources, strengthen food reserves and institutional groups.

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